pair with a female even before her wings had half finished developing. Now this is rather an important fact as it confirms what Schmidt said about a *neurica* refusing to pair with an *arundineta*. Copulation is generally over by 10 o'clock when the males fly strongly for about an hour.

The insect was first taken in this country at Yaxley Fen, in 1847, by Mr. F. Bond, and soon afterwards it was taken there commonly, as well as at Whittlesea Mere, until they were drained. The black ones also came from Yaxley and, I believe, were not taken again until they were re-discovered, during the last few years, in Suffolk and Kent. The species also occurs in Norfolk, Cambridgeshire, Lincolnshire, Suffolk, Kent, Essex, Middlesex, Lancashire, and Germany, Switzerland, Holland, Denmark, Russia, Persia, and Transcaspia.

The differences between *neurica*, Hb., and *arundineta* may be noted as follows:—

NEURICA.	ARUNDINETA.
Collar white.	Collar same colour as body.
Central streak blackish, containing three white dots, the outer one forming the central spot.	Central streak blackish, no white dots, central spot black, encircled, or partly so, with white.
Underside quite plain, with no markings.	Underside showing the central spots and marginal lunules.

I am deeply indebted to Mr. Prout for his help with the translations from the German, to Herr Püngeler, of Aachen, for sending me specimens of *neurica* and *arundineta*, and also to Mr. Bowles and the Rev. C. R. N. Burrows, for much valuable assistance.

The photographs 1 to 4, 6 to 9, and 11 to 12, were taken by Mr. F. Noad Clark; nos. 5 and 10 (undersides) by H. M. Edelsten.

EXPLANATION OF PLATE II.

1. *N. neurica*, Hb., ♂, taken by Schmidt himself.
2. *N. neurica*, Hb., ♂, from Professor Stange.
3-4. *N. neurica*, Hb., ♀, from Professor Stange.
5. *N. neurica*, Hb., ♂ (underside), taken by Schmidt himself.
6. *N. dissoluta* var. *arundineta*, Schmidt, ♂, taken by Schmidt himself.
7. *N. dissoluta* var. *arundineta*, Schmidt, ♀, taken by Schmidt himself.
8. *N. dissoluta* var. *arundineta*, Schmidt, ♂, from Norfolk Broads.
9. *N. dissoluta* var. *arundineta*, Schmidt, ♀, from Central Asia.
10. *N. dissoluta* var. *arundineta*, Schmidt, ♂ (underside), from Norfolk Broads. Slightly enlarged.
11. Ova *in situ* of *N. dissoluta* var. *arundineta*, Schmidt, from Norfolk Broads.
12. Ova *in situ* of *N. dissoluta* var. *arundineta*, Schmidt, from Norfolk Broads. Enlarged ×15 diameters.

Notes from the Wye Valley: Lepidoptera in 1906.

By J. F. BIRD.

From what I can gather from the entomological magazines, the past season appears to have been a very fair one on the whole, with a good sprinkling of rarities. Perhaps our luck was out, at any rate we shall remember the year 1906 as one of the worst we have experienced since living in the country. I must own that the Diurni were fairly plentiful, but we found the Heterocera, especially the Geometrides, quite below the average. The season began early, and light soon attracted several of the early species. Sallow, also, was attractive, and

we really thought we were going to have a splendid year, but, before the end of May, we were beginning to feel rather dispirited, for dusking was anything but exciting, and beating for Geometrides very unprofitable. In June we tried treacling, but soon gave it up in despair when we found that the Noctuides were "not taking any thank you." It must be the flowers, we said. So *Centranthus ruber*, honeysuckle, etc., were assiduously watched and plenty of the common Plusiids netted, but hardly any of the treacle-frequenting moths noticed. We then tried honeydew, there was plenty of it, but, alas! honeydew was no good at all. I was not surprised, for I have noticed that when treacle is a failure it is not the slightest good working honeydew, which is only attractive when treacling is lucrative. I wonder if this is the experience of other collectors. So sped the months up to the end of August. The treacle-pot was again brought out and we found matters had improved a little. Common moths turned up fairly well, so we had hopes that something really worth taking would join the feast. Again we were disappointed, only the common moths turned up in rapidly diminishing numbers until the middle of September, when treacle was again quite useless. We could only hope that the good things we had waited so patiently for would appear at ivy blossom, but, with the exception of one specimen of *Peridroma saucia*, the few moths that did come were only the usual common autumn species.

Diurni.—I have already recorded (*antea*, vol. xviii., pp. 277 *et seq.*) the butterflies met with in the Wye Valley last season, up to the end of October, and so will only mention here the few noticed since, to complete my records for the whole year:—*Vanessa io*, November 2nd; *Pyrameis atalanta*, November 3rd; and *Aglais urticae*, November 10th.

Heterocera.—One of the *Sphinx ligustri* bred last year was from a larva I found at Llandogo, on ash. When first found it was curious in having a pink and shagreened horn, which fussed us greatly. A day or two later it moulted, the last change but one, if I remember rightly, when it appeared with its caudal appendage smooth and shining, and of the correct black hue. In confinement it declined to eat ash, but fed up to an enormous size on privet, the resulting imago being a ♀, measuring a shade over 4½ inches. A fullfed larva of *Eumorpha elpenor* was found in my brother's garden, crawling along the ground, preparatory to burying. *Anthrocera trifolii* and *A. filipendulae* we saw, for the first time, in this district. They both made their appearance in the same field, one we have collected in since 1904, and we are hoping they will be able to establish themselves there. The first-named was noted from June 12th to mid-July, whilst the last-named, which was scarcer than the former, was not seen until July 14th, when *A. trifolii* was practically over. I also took two very large specimens of *A. filipendulae* by the roadside, near Gloucester, on July 3rd, which have remarkably broad borders to the hindwings. Although I searched carefully I could find no more. Only one *Hepialus hectus* was met with at Tintern, in a wood, but *H. lupulinus*, *H. sylvinus*, and *H. humuli* were as common as usual. *Nola confusalis* was rather common in our orchard on the trunks of the fruit-trees, and one was found on the upperside of a bramble leaf, close to the droppings of a bird, to which it had a remarkable likeness. *Nudaria mundana* is always plentiful. The best way to find the larvæ is to search the sides

of suitable stone walls at night with a lamp, in May and June, when they may be found in abundance. *Lithosia lurideola* was the only other Lithosiid met with; it is not common here. *Euchelia jacobaeae* turned up as usual, and *Nemeophila plantaginis* met with for the first time and two captured. One fullfed larva of *Phragmatobia fuliginosa* was all that was found of this species, on the last day of July, the spinning up taking place next day. In May, *Dasychira pudibunda* was bred from a larva found on beech at Llandogo; it is not so common here as in Sussex. The larvæ of *Demas coryli* I have found sparingly every year on beech, and, although they change into healthy-looking pupæ, I have not yet succeeded in breeding a single imago. Do they lie over several winters? I ask, because my pupæ look healthy and are still lissom. Will somebody be kind enough to tell me whether they require any special treatment?* In December, *Poecilocampa populi* was scarce; only two ♂ s turned up, both being attracted by light. A few larvæ of *Drepana falcataria*, *D. lacertinaria*, and *Notodonta dromedarius* were found in August and September, and *N. dromedarius* and *Lophopteryx camelina* bred in the early part of the year. In 1905, examples of the second brood of the last two, as well as *Pterostoma palpina*, were obtained. The larvæ of *Dicranura vinula* are usually rather common on our poplars, but last year not a single one was seen. *Gonophora derasa* was another of the absentees, and *Thyatira batis* very scarce. *Cymatophora diluta* was rather common at treacle in September, and the larvæ of *Asphalia flavicornis* abundant in May and June. One small larva of *Acronicta leporina* was found on alder, but, unfortunately, refused to eat in confinement. *Triaena psi* was seen on tree-trunks, and *Cuspidia megacephala* noticed in the larval state on poplar. The two broods of *A. rumicis* are usually plentiful at treacle, but scarcely one turned up last year. Even *Agrotis exclamationis* neglected the treacled trees, but was noticed more often at *Centranthus ruber*. *Triphaena pronuba* and *T. orbona* were also scarce at treacle, and only one *T. fimbria* made its appearance. A few *T. janthina* were taken at flowers, and larvæ obtained in the spring on honeysuckle with those of *T. orbona*, *Noctua festiva*, etc. *N. dahlii* (one), and *N. brunnea* were taken at dusk, and *N. plecta* and *N. rubi* at treacle. *Heliophobus popularis* occurred at light more freely than we have before known it here. *Aplecta nebulosa*, *Hadena thalassina*, and *H. dentina* were all scarce. A few *Dianthoecia capsincola* were bred and more larvæ found on sweet-william. Although the larvæ of *Polia flavicincta* and *P. chi* were abundant as usual, the imagines were not nearly so common. *Dryobota protea* at treacle and *Miselia oxyacanthae* with ab. *capucina* at ivy blossom, turned up sparingly in the autumn. *Luperina testacea*, *Xylophasia rurea* ab. *combusta*, and *Apamea gemina* were attracted into the house by light, as was also a smoky example of *A. basilinea*. *Hydroecia nictitans* was not nearly so abundant as usual. Pupæ of *Gortyna flavago* were found in the stems of thistle and foxglove, and specimens, very variable in size, bred. Do the larvæ of *Tapinostola fulva* feed in the stems of *Luzula?* I found it fairly common in a wood at Llandogo where woodrush abounds. *Taeniocampa gothica* was quite the commonest moth at sallow in April, *T. stabilis* being a good second. *T. pulverulenta*,

* See early vols. of *Ent. Record.* Several references can be obtained from "Special Indexes" to these vols., relating to this species.

T. populeti, *T. incerta*, *T. munda*, and *T. gracilis* were some of the other visitors. Two specimens of *T. populeti* were also bred from larvæ found in 1905, when taking those of *Tethea subtusa;* the latter being rather common in that stage on poplar. *Amphipyra pyramidea* and *A. tragopogonis* were both abundant at treacle in September. *Chortodes arcuosa* was taken by my father at light, and *Grammesia trigrammica* also was attracted in this way and one or two netted at dusk, but was much rarer than in 1905. The imagines of *Cosmia trapezina* were quite a nuisance in August, and we got quite tired of turning them out of the net when mothing at dusk. *Anchocelis litura* occurred sparingly at treacle in September, but *A. pistacina*, usually so plentiful, was quite rare, only two specimens being seen. *Orthosia macilenta*, *Mellinia circellaris*, *Orrhodia spadicea*, *O. vaccinii*, and *Scopelosoma satellitia* were more in evidence, but not many of these were noticed, and only single specimens of *Orthosia lota* and *Phlogophora meticulosa*. In the spring one *Xylina petrificata* was taken at sallow, and a single *X. rhizolitha*, found at rest on a stone wall. The latter was the only *Xylina* seen in the autumn, when a few were taken at rest, but not a single specimen seen at ivy blossom. In the spring we bred several *Xylocampa lithorhiza*, from larvæ found in the garden, on honeysuckle; the first one emerging on March 1st, sixteen days before the first wild specimen turned up at light. On September 17th, while cycling, I noticed a moth flying wildly about in bright sunshine, near Bigsweir Bridge, so I dismounted and watched it for a minute or so, as it flew from one plant to another, hovering about each as if seeking something. Eventually it flew down into the grass by the roadside, where I managed to box it. On reaching home I found I had secured a male specimen of *Tiliacea citrago*. *Cucullia umbratica*, *Plusia chrysitis*, *P. pulchrina*, *P. iota*, and *P. gamma* all frequented the flowers in the garden, the last three plentifully. *Habrostola urticae* and *H. triplasia* were not so common as usual, and *Heliodes arbuti* was very scarce. In 1904 and 1905 we obtained *Bryophila glandifera* and *B. perla* in small numbers, but saw neither species last year. A few *Sarrothripa revayana* were netted in August and September at dusk, and *Gonoptera libatrix* was common at the same time, flying backwards and forwards in dark corners among bushes. I believe *Catocala nupta* is usually considered scarce in this part of England, so it may be worth noting their presence on telegraph poles near Monmouth. *Euclidia mi* was very common in June, and, on the 12th of that month, I captured four specimens in about five minutes, assembling to a worn and ragged ♀ which was clinging to a grass stem in a field. The ♂s came up swiftly against the wind, flying very straight and low, only just above the tops of the grass, quite unlike the wild and zigzaggy flight of *Lasiocampa quercus* when seeking the female. At the end of five minutes I found, after securing the fourth ♂, that the attracting ♀ had flown away. In August several of the larvæ were swept, but nearly all were "stung." The parasite that infests them is remarkable in generally attaching its cocoon crosswise on the back of its host. This cocoon, which is fusiform and longitudinally and irregularly ribbed, is remarkably seed-like in appearance. The unfortunate caterpillar, after the parasitic larva has eaten its way out, crawls restlessly about, and lives for several days, perhaps a week, when it shrivels up. *E. glyphica* was also fairly common, and several fine specimens were obtained.

Herminia tarsipennalis, *H. grisealis*, and *Hypenodes costaestrigalis* were all common in their respective haunts, and *Hypena proboscidalis* abundant everywhere. Has the natural foodplant of *H. costaestrigalis* been discovered yet? This species is locally plentiful in damp spots in and, more especially, on the outskirts of woods, and I have often watched the ♀ s at dusk, hoping to discover one in the act of ovipositing, but without success. They most frequently settle on grass stems in dark corners near bushes, where they remain for several minutes without moving. On July 4th I beat a specimen of *Bomolocha fontis*, and during the last week of August found the larvæ common on *Vaccinium myrtillus*. One *Rivula sericealis* was netted at dusk in July at Llandogo, the only specimen we have met with here. On March 7th I saw the first *Brephos parthenias* near Redbrook, Gloucestershire, and, on the 28th of that month, had the pleasure of capturing a fine specimen in a wood at Tintern, schoolboy fashion, with my cap, while it was settled and fluttering its wings on woodrush. This handsome species was common last year, but I only captured two, the second on April 7th at Llandogo, when it flew down and settled almost at my feet. *Urapteryx sambucaria* was common, but *Angerona prunaria*, which occurred freely in 1905, was decidedly scarce. A few *Venilia macularia* were taken in a wood, but it was not common. *Cabera pusaria* and *C. exanthemaria* males, and *Bapta temerata* females, were as common as usual. Have other collectors noticed the scarcity of the females of the first two and the males of *B. temerata*? *Macaria notata*, *Numeria pulveraria*, and *Gonodontis bidentata* were all scarce last year, and *Panagra petraria*, though common, in much fewer numbers. *Ennomos angularia*, *Epione adrenaria*, and *Metrocampa margaritata* were to be obtained by beating, and *Selenia bilunaria*, *S.* var. *juliaria*, and *Pericallia syringaria* taken at dusk. *Phigalia pedaria* made its first appearance on January 25th, at light. In May several *Tephrosia crepuscularia* (*binudularia*) were found on tree-trunks, and one very handsome melanic specimen bred. *T. punctularia* was very rare, only one specimen being met with, and *T. extersaria*, which was common in 1904 and scarce in 1905, was not seen at all. *Boarmia repandata* was bred and also netted at dusk, but was not common. *B. rhomboidaria* occurred in the garden, and one *Hemerophila abruptaria* netted at Llandogo. I do not think the latter is common about here. Of the autumn Hyberniids, only *Hybernia defoliaria* turned up, but not plentifully. *H. progemmaria*, *H. rupicapraria*, and *H. leucophaearia* were all noted in the early part of the year, light attracting the last named on January 30th. *Anisopteryx aescularia* was bred and specimens also came to light, the first on February 27th. *Abraxas ulmata* was very scarce in a locality where we usually find it in abundance, and even *A. grossulariata* was not very common last season. We have no *Euonymus europaeus* in our immediate neighbourhood, and consequently have not seen much of *Ligdia adustata*, but, in September, on the Gloucestershire side of the river, near Bigsweir, I discovered plenty of these bushes and soon found several larvæ, but they were nearly all "stung." In May, larvæ of *Geometra papilionaria* were found on birch, and several fine specimens bred. One example of *Ephyra punctaria* was beaten in a wood at Tintern, a species we have not met with before in this district. *E. trilinearia*, usually common among the beeches, was not seen at all in the winged state, but in August the larvæ were noted. On August

5th, at dusk, I watched a female *Acidalia bisetata* ovipositing. It settled on the underside of an apple leaf, on the midrib, towards the base of the leaf, and laid one ovum, attaching it to the long down on the rib. The egg hatched on August 12th. At the end of June *Acidalia subsericeata* was captured at dusk; a species new to us. *Melanippe hastata* was bred and also netted in June. It is rather fond of the flowers of *Euphorbia amygdaloides* and wild hyacinth. Later on in the season a few of the larvæ were obtained from birch. *M. subtristata*, *M. unangulata*, *M. procellata*, *Melanthia albicillata*, and *M. rubiginata* were all scarce, though usually common. *Anticlea badiata* and *A. nigrofasciaria* were met with in the spring, and both were attracted by light; the former also visiting the sallow. *Coremia propugnata*, *C. unidentaria*, and *Larentia didymata* swarmed as usual, and *C. ferrugata* and *L. pectinataria* seen in fewer numbers. *Asthena sylvata*, *A. blomeri*, and *Minoa euphorbiata* were all much scarcer than usual, and only one or two specimens of *A. luteata*, *Eupisteria heparata*, and *Emmelesia decolorata* noticed. *Cidaria miata*, *C. corylata*, *C. picata*, *C. russata*, *C. immanata*, *C. suffumata*, *C. silaceata*, *C. prunata*, *C. fulvata*, *C. populata*, and *C. testata* were netted at dusk or beaten. *Scotosia dubitata* was very common at dusk, which, I am glad to say, *Camptogramma bilineata* was not, nor does it ever swarm here as it does in Sussex. *Hypsipetes sordidata*, with plenty of the smoky varieties, occurred freely, and one lovely aberration, similar to the one depicted on pl. 369, fig. 1*b*, in Barrett's *Lepidoptera of the British Islands*, but even more striking, was netted at dusk on August 20th, in perfect condition. *Cheimatobia boreata* usually turns up at light in November and December, but not a single specimen made its appearance last year. *Lobophora hexapterata* was also absent, but *L. lobulata* was not uncommon on tree-trunks at the end of March and in April, and was also bred from sallow. Several *Chesias spartiata* were taken on the windows, attracted by light, and one *C. obliquaria* bred from a larva found in 1904, and so had passed two winters as a pupa. *Anaitis plagiata* turned up sparingly in August and September, and *Eubolia limitata* at the end of July. *Eupithecia pulchellata* was bred from larvæ obtained in foxglove flowers, and *E. castigata* from one feeding in the seed-vessels of sweet-william. *E. abbreviata* was common in a wood on April 6th, and very variable. Other "pugs" taken or noticed were *E. subfulvata*, *E. vulgata*, *E. absynthiata*, *E. assimilata*, and *E. rectangulata:* but *E. lariciata* and *E. isogrammata*, though taken rather commonly in 1905, were not met with at all.

Notes on Egyptian and Syrian Butterflies.

By PHILIP P. GRAVES.

Papilio machaon.—*Syria:* May 17th, 1905, flying with *Iphiclides podalirius* near Aleih. July 9th, 1904, Dog River, near Beyrout. A few seen July 10th-15th, at Ain Zahalta. This species does not appear to occur in Egypt.

Pieris brassicæ.—*Syria:* Common at Beyrout, end of July, 1904, and just appearing at that time on the Lebanon mountains. Jaffa, May 9th, 1905. The second brood specimens have a very light underside, while the apical markings in both sexes, and spots in the ♀, are well developed. Apparently not in Egypt. Occurs in Cyprus (Marsden).